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Workeſhire Philoſophical Society.

ANNUAL REPORT

FOR

MDCCCLXXX.

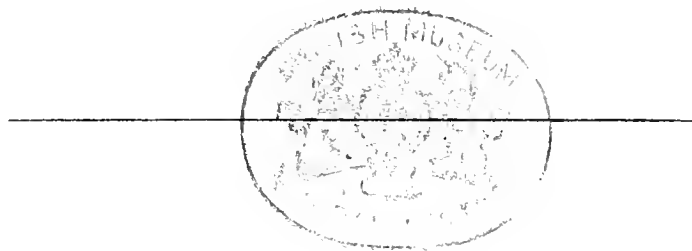


S. nos. A. 6.

ANNUAL REPORT
OF THE COUNCIL
OF THE
YORKSHIRE
PHILOSOPHICAL SOCIETY
FOR
MDCCCLXXX.

PRESENTED TO THE ANNUAL MEETING,

FEBRUARY 1st, 1881.



YORK:
J. SOTHERAN, BOOKSELLER, CONEY STREET.

1881.

PATRONESSES

OF THE

Yorkshire Philosophical Society.

HER MAJESTY THE QUEEN

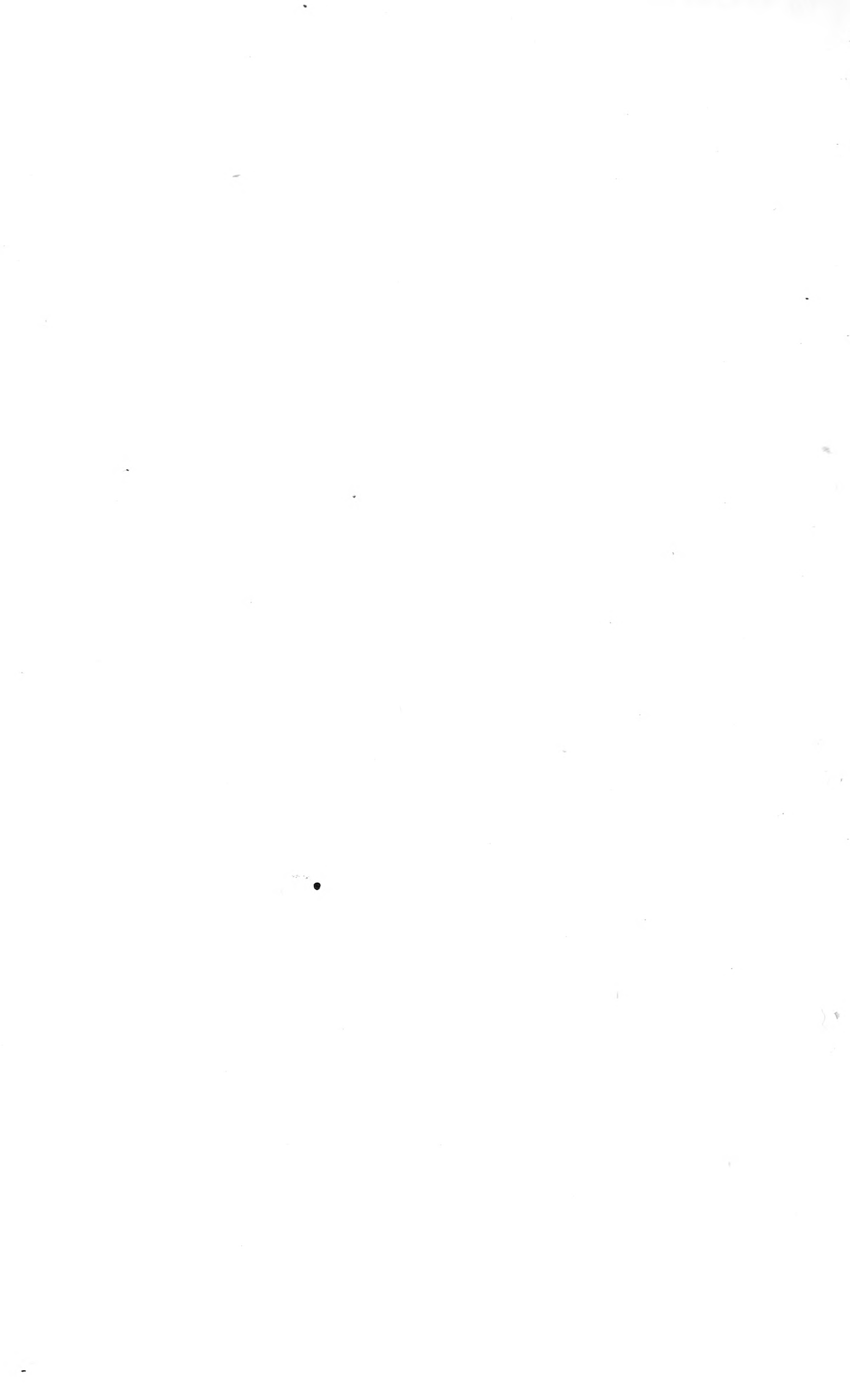
H. R. H. THE PRINCESS OF WALES.

PATRONS.

H. R. H. THE PRINCE OF WALES, K.G.

H. R. H. THE DUKE OF CONNAUGHT, K.G.

HIS GRACE THE ARCHBISHOP OF YORK, F.R.S.



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OBSERVATORY & METEOROLOGY	{ VEN. ARCHDEACON HEY, M.A. T. S. NOBLE, F.G.S.
<i>under the care of a Committee</i>	
<i>consisting of</i>	

 KEEPER OF THE MUSEUM.

WALTER KEEPING, M.A., F.G.S.

REPORT OF THE COUNCIL
OF THE
YORKSHIRE PHILOSOPHICAL SOCIETY,

Read at the Annual Meeting on

FEBRUARY 1ST, 1881.

In presenting their Report for the year 1880, the Council of the Yorkshire Philosophical Society congratulate the members on the prosperous state of the Museum in regard to finances and science. During the last four years an extraordinary expenditure has been incurred, which leaves a considerable sum on the debit side of the balance sheet. This the Council, following the usual order in these Reports, will now explain, and then proceed to report on the various scientific departments of the Museum. The Council have every confidence that when this Report has been concluded, the members of the Society will be of an unanimous opinion that its affairs, its honour, and its interests have been well cared for by the Executive, who now render this account. It will be necessary, however, in order fully to understand the scope of this Report, to refer to that of the year 1876 and the four intervening years.

In the year 1876 the Report presented a balance sheet of average receipts and expenditure; but in the following year, 1877, a debt of £650 2s. 3d., the balance due on the Lodge building account, was taken into the general account. This sum formed the nucleus of an increasing debt, which now amounts to a considerable sum. The members, however, must be reminded that in the four intervening years, from 1876 to 1880, an extraordinary expenditure was rendered necessary by special circumstances, not likely to occur again during the lifetime of the present generation, which amounted to the

large sum of upwards of £2,100; whilst the present debt does not reach two-thirds of that sum.

This debt, £1,378 5s. 9d., would have been reduced considerably during the present year but for the expenditure for new cases and alterations required for the display of Mr. W. Reed's munificent donation, amounting in the whole to £667 14s. 9d., of which large sum £150 only can be charged as ordinary expenditure.

During the four years referred to the following expenditure was incurred:—

	£	s.	d.
In 1877-8 the New Roof to the Museum and the large room in which the Ethno- logical Museum is displayed cost ..	413.	2.	5
In 1878 the Alterations in the Geological Room cost the further sum of	198.	2.	9
The Inclosure of the Acre of New Ground added to the Gardens	263.	11.	10
The purchase of Antiquities	104.	12.	7
If to these items be added the debt on the Lodge Account	650.	2.	3
And the extraordinary expenditure of the present year, for cases and alterations for the Geological Museum, £667. 14. 9			
Less 150. 0. 0	517.	14.	9

The Total amount of extraordinary
expenditure for the above period will be £2,147. 6. 7

When the members are further reminded that these items of expenditure have been incurred for improvements and additions to the real estate of the Society, and the collections in the Museum, which have increased the value of the Society's property far beyond the sum named, the Council cannot but believe that the balance sheet, when further treated of at the close of this Report, will be found highly satisfactory.

It may be stated before this part of the Report is closed that the wave of agricultural and commercial depression, which seems to have pervaded the whole of Europe, has had a material

effect in reducing the average amount received at the gate for admission money. This year the gate-money amounts to £272. 8s. 6d., as against £368. 13s. 6d. of the previous year.

In the autumn of last year, Dr. Purves, the keeper of the Museum, resigned his office, having been appointed one of the staff on the Government Survey in Belgium.

Your Council at once took steps to supply his place, and after full enquiry and investigation into the testimonials of the gentlemen who sought the office, they elected Mr. Walter Keeping, M.A., of the University of Cambridge, to the vacant office. Mr. Keeping's testimonials were of the highest order. He took a first class in the Scientific Tripos in the University, and for some time was an officer in the Cambridge Museum, where he acquired a large and extensive experience in the arrangement and naming of fossils. He asked, however, a larger salary than had been allowed to his predecessor. The Council felt bound to consider the wishes of our great benefactor, Mr. Reed, whose colleague in the arrangement of the Geological Museum the new Keeper would become, and at his instance and special request the following arrangement was made. The salary of the new Keeper was fixed at £200 a year, the ordinary salary, but the Council determined that as soon as the tenant vacated St. Mary's Lodge, it should be restored to the purpose for which it was formerly used and become the residence of the new Keeper of the Museum; and that the garden now attached to the house should be added to the Museum grounds, which will effect a great improvement. These terms Mr. Keeping accepted. The Council directed a notice to quit to be served on the tenant, and the house will be vacated on Lady Day next, when Mr. Keeping will at once enter upon his residence. In the meantime, the Council undertook to pay Mr. Keeping at the rate of £40 a year for house-rent until the 6th April.

It is true that a small loss of income will accrue from this arrangement, but the Council felt that this was the best course to adopt under the circumstances, as for reasons which need not be further explained, the residence of the chief officer of the Museum on the Society's premises was greatly needed, and will be of great benefit to the Society. In the view of the ensuing meeting

of the British Association at York this year, the members both of the Association and the Society will find this arrangement of great use. The Council had peculiar satisfaction in acceding to this arrangement, as Mr. William Reed, who has again generously enriched our Museum with a collection which may be justly termed one of the great geological treasures of Yorkshire, strongly advised this course; but the advantages of this arrangement will be obvious to the members.

Mr. Keeping commenced his duties at the Museum in September last, and the manner in which these have been performed, and the present state of the collections, have been highly satisfactory to the Council, who congratulate the members on the acquisition of so valuable an officer. When it is remembered that the collections on which Mr. Keeping is now engaged consist of upwards of 100,000 specimens in number, that each specimen has to be carefully tabulated and stratigraphically arranged, some idea may be formed of the vast amount of labour and scientific skill which will have to be expended before the arrangement of the collection is completed.

Nearly two years ago your Secretary was invited by the Lord Mayor to accompany his Lordship and the Town Clerk to Sheffield to support an invitation to the British Association to visit York at their fiftieth anniversary, which, as is now well known, will take place here in the autumn of this year. In supporting the invitation your Secretary informed the President and Members of Committee that no persons would so heartily welcome the Members of the Association to York as those who now constitute the Society, from whose Museum, in the year 1831, the Association went forth; a welcome which the Council are sure every member now present will as heartily join in giving when the time arrives.

It may not be out of place briefly to state a few facts respecting the foundation of the British Association and its connexion with this Society.

The original suggestion as to the formation of a scientific society appears to have been made to the Council by Dr. Brewster, afterwards so well known as Sir David Brewster, in

April, 1831. He appears to have taken the idea from the fact that societies consisting of meetings of men of science annually took place in Germany. It was, however, to the high powers of administration, and to the learning and energy of the late Rev. William Vernon Harcourt, the son of the then Archbishop of York, a great benefactor to this city, and the founder of this Museum, that the Association owes its formation. On the 27th of September, 1831, Mr. Harcourt, in an address of the utmost ability, gave his exposition of the objects and plan of the Association. This address will well repay a perusal by all interested in the history of the Association.

Mr. Harcourt, in this address, drew attention to the fact that in Lord Bacon's new Atlantis was to be found the first idea bearing upon similar associations. Bacon, in his interesting romance, has drawn a picture of a society organized with a view to the purposes of scientific co-operation. At the close of the meeting, Mr. Murchison, afterwards known as the great geologist, made the following remarks in this hall, which may be recalled with pleasure :—

“He explained the motives which first induced the original promoters of the meeting to select the City of York for their first assembly.” He then went on to say, “To this city, as the cradle of the Association, they should ever look back with gratitude, and whether they met hereafter on the banks of the Isis, the Cam, or the Forth, to this spot, to this beautiful building, they would still fondly revert, and hail with delight the period at which in their gyration they should return to this point of their first attraction.”

The additions to the GEOLOGICAL DEPARTMENT have been numerous and important.

Besides the large collection of fossils formed by the late Mr. E. Wood, of Richmond, various other specimens that were needed in the collection have been added through the liberality of Mr. Reed, the honorary curator.

We are indebted to our late esteemed honorary treasurer, Mr. William Gray, for a number of interesting fossils from various geological horizons; also to Mr. Fielden Thorpe, of

Blossom Street, for a very complete specimen of *Ichthyosaurus tenuirostris* from the Lias of Street, Somersetshire; to the Rev. W. C. Hey for a series of Portlandian fossils; to Mr. J. Brown, of Monkgate, for a fossil fish from the Whitby Lias; to Mr. Cameron, of H. M. Geological Survey, for specimens of Yorkshire Rhaetic fossils; and to Mr. J. F. Walker, M.A., for various Brachiopoda and other fossils from the secondary formations.

Much progress has been made in the arrangement of the Museum during the last twelve months. The collection of Yorkshire fossils, from the Chalk to the Cornbrash, inclusive, has been arranged in the cases; and the remaining space allotted to this collection is now undergoing alterations preparatory to the work being resumed and completed.

During the last four months we have been engaged in the arrangement of the general collection of fossils in the galleries of the east room, and in this we have advanced as far as the Lower Oolites. The space now available in the Museum is insufficient for the display of much more of the collection.

The work of arranging has, of late, been interrupted on account of the acquisition of the geological collection formerly belonging to Mr. E. Wood, of Richmond. Much time was spent in the packing at Richmond and the unpacking and storing of the specimens in our Museum. This collection will be incorporated with the other fossils in their proper places, in due course, as the arrangements proceed.

It is again, as on a former occasion, to the bounty of our constant helper, Mr. William Reed, F.G.S., Honorary Curator of Geology, that the great advance in the growth of our Museum during the past twelve months is due.

Two years ago it was the pleasant duty of the Council to inform the members of the gift of Mr. Reed's great collection of fossils—a collection of more than 100,000 specimens of the rarest and choicest character; and now Mr. Reed has again, at great expense, enriched our Museum by the purchase and presentation of the geological collection formed by the late Mr. Ed. Wood, F.G.S., of Richmond, Yorkshire.

This collection, consisting of above 10,000 specimens, is

particularly valuable to us from its richness in the fossils of those geological groups in which Mr. Reed's original cabinets and the old Museum collection were most deficient, namely in the old Red Sandstone, Carboniferous, and Permian formations.

Amongst the greatest treasures for which Mr. Wood's Museum has obtained world-wide celebrity are the *Crinoids*, or Sea Lilies, especially the *Woodocrinus* and the *Brachiopoda*; and it is also of special scientific value as containing many type specimens. The possession of these gives to our Museum much importance, attracting of necessity the attention of scientific workers.

In the North of England, York and Richmond have been, of late years, the principal attractions for investigators of the past history of organic life, the latter because of the presence of Mr. Wood's collection, and the former for that of Mr. William Reed, as well as our own Museum. All these, by the princely gift of Mr. Reed, are now united in the Society's Museum.

Nor must we value as an unimportant part of our Honorary Curator's benefactions his untiring zeal and labour now devoted to the work of arranging the collections. That same energy and extreme carefulness, combined with tasteful discrimination which have left their abiding mark in his collection of fossils, are now employed to the great advantage of the Society's Museum in the arrangement of the specimens.

These arrangements, together with that of the other departments of the Museum, are now satisfactorily progressing, and before the next report is read in this hall we hope to possess a geological collection, well exhibited and arranged, second only in importance to the museums of the Metropolis and the Universities.

The Curator of ANTIQUITIES reports :—

The additions to the Antiquarian Department of the Museum during the past year have been numerous and varied. In Roman curiosities York itself has yielded a fine gold ring set with an engraved carnelian, a bronze vessel, ten urns, and many smaller remains of less interest. The greatest discovery, however, of the year has been that in the garden of St. Mary's

Convent, to which the attention of the members of the Yorkshire Philosophical Society has been already directed.. It is to be hoped that these choice remains, which consist of three inscribed stones and a statue, will eventually find their way into our Museum. Through the kindness of Messrs. Foster, the owners of the Egton Estate, a rudely inscribed stone which was discovered at the beginning of this century at Hazlehead, near Whitby, has been presented to us. The letters, most unfortunately, have been considerably injured, and no one but an Œdipus can decipher them. We have also acquired by purchase during the year above 170 Roman silver coins, which were discovered in 1848 at Boston Spa. The imperial coins in the series are remarkably fine, and as it ends with Hadrian we may assume that the treasure was concealed while he wore the purple. The Curator has also to report many additions to the British, Anglian, and Mediæval Departments in the antiquarian collection which will greatly enhance the interest with which it is regarded.

During the past year some important changes have been made in the Hospitium. The roof, which was in a somewhat dangerous condition, has been made secure, and some alterations have been made in the arrangement of the collections. The Egyptian antiquities, a very fine series of Anglian urns which the Society has recently acquired, and the smaller Mediæval and more recent antiquities have still to be shown in the ethnological room in the Museum, and new cases are required for their exhibition.

The Curator has to announce the loan of a considerable quantity of ancient pottery from Cyprus and Crete, which has been very kindly sent by Mr. T. B. Sandwith, C.B., H.B.M.'s Consul at Crete, at the suggestion of Mr. John Holmes, of Roundhay, near Leeds. This collection is a very valuable one, and will soon be arranged in the theatre of the Museum.

The Honorary Curator of BOTANY reports:—The British and Foreign Herbaria are in a good state of preservation. W. H. Rudston Read, Esq. has kindly presented to the Society a large number of plants.

CONCHOLOGY.—*British Shells*.—A considerable amount of attention has been given to the land and freshwater shells. All inferior specimens, and almost all specimens to which no locality was attached, have been replaced by finer examples, obtained, whenever possible, from the neighbourhood of York. This part of the collection is now to a large extent local, and is fairly worthy of what is, perhaps, the best district for freshwater shells in the United Kingdom. The most interesting additions are *Sphaerium ovale*, from the Foss, *Planorbis dilatatus* from Manchester, and a gigantic example of *Anodonta cygnea* from Fairfield.

The Marine Shells have, to a smaller extent, been treated in the same way as the land and freshwater. A considerable number of unlocalized specimens have given way to specimens from the Yorkshire Coast, the rich beach of Redcar supplying the greater number. The Reed Collection was, however, nearly complete, and the specimens as a rule are very fine. The genus *Pecten* will be found to contain a number of gems, which have only lately been exhibited in the case.

It is to be regretted that the British Shells are exhibited in so cramped a space, and at an angle which renders their position very dangerous.

Foreign Shells.—After considerable deliberation, it was decided that, in default of sufficient room, a small but choice selection should be made from the foreign shells, and exhibited in the upper part of the central case of the skeleton room, until suitable space could be gained for arranging the whole collection.

The Curator, on commencing this work, found the Museum in possession of a vast number of foreign shells—truly a “rudis indigesta que moles”—stowed away in drawers and cabinets. Few were named (as the old names were all jumbled together), and none, or hardly any, were localised.

Many of the specimens, however, are of the greatest beauty, and of considerable rarity. We are in possession of the making of a good collection, when room can be found; although much work will be required, as, owing to the way in which the collection has been got together, we find perhaps twenty specimens of one species, while whole groups are altogether

wanting. This may be remedied by effecting exchanges. The present selection aims at being little more than generic ; there are neither the books nor the time for the identification of many of the species. Nevertheless, it will be broadly instructive and more useful for general instruction than a fuller series. The absence of localities is much to be deplored. The species recently added belong to groups which the old collections scarcely represented, and are valuable from being precisely localised. They belong strictly to the genera *Helix*, *Nerita*, *Cerithium*, and *Cyclostoma*.

It is to be hoped that, as soon as possible, flat cases may be provided for the foreign shells, as they cannot be safely exhibited at an angle, while all the larger species are excluded by their size and weight.

COMPARATIVE ANATOMY.—The Skeletons have been cleaned, and their position and mounting attended to. The most important part of this work was on the skeletons of British Birds.

A large number of bones, skulls, and stuffed animals, including several fish skins and stuffed fishes, mostly British or from Jamaica, which have long been hidden in the store-rooms, have been arranged in their places in the Museum.

A large and valuable collection of skulls and other osteological remains, the gift of W. Reed, Esq., F.G.S., has been incorporated with the collection. Thanks are due to this gentleman for the supervision of the rearrangement mentioned above.

The cases have been cleaned, and painted inside a pale tint, which contrasts well with the colour of the contents ; and the collection only requires re-labelling and the addition of descriptive tablets to render its arrangements complete.

MINERALOGY.—The Curator of Mineralogy reports that no alterations or additions have been made during the past year. It is in contemplation to relabel and, to a certain extent, to rearrange the collection.

METEOROLOGICAL REPORT.

The mean height of the Mercurial Column, duly corrected, for the year 1880 was 29·962. The highest reading was 30·665 on January 7th at 6 p.m., and the lowest 28·466 on November 16th at 2 p.m. An exceptionally low pressure was maintained throughout the 16th of November, accompanied by moderate temperature and rapid change of wind. Weather cloudy. See table:—

BAROMETRIC PRESSURES

ON NOVEMBER 15TH AND 16TH, 1880.

Nov. 15	9 a.m.	29·695	Wind N.N.E.	Dry Bulb	30·8
„ 16	9 a.m.	28·685	„ S.S.E.	„	42
	12 p.m.	28·522	„ S.	„	47
	1 p.m.	28·478	„ S.	„	46
	2 p.m.	28·466	„ W.S.W.	„	46
	3 p.m.	28·467	„ W.S.W.	„	41·5
	4 p.m.	28·487	„ N.N.W.	„	39
	6 p.m.	28·557	„ N.N.W.	„	41
	9 p.m.	28·796	„ N.	„	39

This is the lowest barometric pressure recorded during the last ten years, except one day, in 1876, when it was 28·439.

High pressures prevailed from January 3rd to January 15th, the highest being 30·665 on January 7th at 9 p.m., and 30·659 on the 12th at the same hour. The weather of this period was cold and cloudy; wind S.S.W. Pressure afterwards oscillated.

The range of pressure during the year was 2·199. The mean shade temperature of the year was 48·1°, which is above the average of the last ten years. The maximum attained was 80·5°, and the minimum 19°, giving a range of 61·5°. The month of September was hot, the highest temperature being 80° on the 3rd, and 80·5° on the 4th, and the lowest maximum during the month was 58°. The lowest temperature this month was 42° on September 19th. The mean temperature of September was, however, below that of August, the former being 58·7°, and the latter 61·8°. The hottest days of August were the 10th (77°), 11th (79°), and the 12th (77°).

The coldest month was January, whose mean temperature

was 35.1° , and the average maximum 39° . On its warmest day, the 16th, the maximum recorder stood at 47° , and on the coldest day, the 19th, it fell to 20° . The coldest day of the year was, however, in November, the temperature being 19° on the 21st of this month at 8 a.m. The minimum thermometer continued below 32° from the 9th to the 31st of January.

The Rainfall for the year amounts altogether to 30.93 inches, which is 7.91 in excess of last year, and above the average. The number of days in which rain fell is 179. July was very wet, its rainfall amounting to 5.21 inches. An unusually heavy fall of rain occurred on the 27th of October, namely, 1.50 inches; and on three other days of the year, March 31st, May 26th, and September 11th the rainfall exceeded one inch.

On Cherry Hill, York, the observations taken by the Sheriff, Mr. Richard Thompson, shew a rainfall of 30.36; and at Old Malton, Mr. H. Hartley kindly supplies us with his observations, shewing a total of 30.50 inches for the year.

Of the winds, we find those from a northerly quarter were frequent, and the actual north wind days number $46\frac{1}{2}$. There has been less east wind than of late years, the south (55 days) and west ($75\frac{1}{2}$ days) being more prevalent.

SUMMARY OF THE NORTHERLY AND SOUTHERLY WINDS
FOR THE LAST FOUR YEARS.

	N. to E.—E. to S.						S. to W.—W. to N.	
1877	..	111 days	..	..	..	..	254 days.	
1878	..	138	„	..	..	..	227	„
1879	..	170	„	..	..	..	195	„
1880	..	144	„	..	..	..	218	„

The year 1880 is very near the mean of ten years given by Professor Phillips—viz., 131 N. to E.—E. to S., and 227 S. to W.—W. to N.

The River Ouse was swollen to a height of $12\frac{1}{2}$ feet above its Summer level on the 29th October; and on two other days, namely, October 30th and December 24th, it rose up to or above 12 feet. Also, on five other days of the year—viz., October 31st, November 1st, November 15th, December 25th, and December 30th it exceeded 10 feet.

From January to June the river level was very uniform, at about Summer level, rarely exceeding three feet above Summer height. The principal variations were an excess of 4 to $8\frac{1}{4}$ feet at the end of February and beginning of March, and another excess of similar amount on the 15th, 16th, and 29th July. In the latter half of August and beginning of September the river again flowed very evenly at Summer level; but in October came the floods of the 29th to the 31st, at a maximum height of $12\frac{1}{2}$ feet.

During November and December the river was very full, never once falling to Summer level, but reaching flood height on November 1st, 2nd, 14th, 15th, and 16th, and December 24th, 25th, 30th, and 31st.

METEOROLOGICAL REGISTER, YORK, 1880.

Based on observations taken at the Museum at York at 9 a.m. and 9 p.m. each day, local time. The self-registering thermometers were read at 9 p.m., and entered to the day on which read, while the Rainfall measured at 9 a.m. has been thrown back to the *preceding* day.

BAROMETER.				RAIN.		THERMOMETER.				
Month.	Highest.	Lowest.	Mean.	Inches.	Days.	Average Maximum.	Average Minimum.	Mean Temp.	Highest.	Lowest.
Jan.	30·659	29·678	30·343	0·29	7	39·8	30·3	35·1	57·0	20·0
Feb.	30·368	28·876	29·698	1·79	18	47·8	35·1	41·5	55·0	26·0
Mar.	30·577	28·958	30·109	2·07	9	49·8	34·4	42·1	58·0	27·0
April	30·532	29·208	29·864	2·30	19	54·5	39·1	46·8	63·0	29·0
May	30·434	29·611	30·119	2·12	11	59·1	40·9	50·0	68·0	32·0
June	30·338	29·534	29·922	1·55	16	64·1	48·3	56·2	74·0	36·0
July	30·145	29·491	29·857	5·21	22	65·2	52·5	58·9	71·4	45·0
Aug.	30·315	29·336	30·043	1·66	10	69·5	54·0	61·8	79·0	46·5
Sept.	30·507	29·264	29·948	4·57	16	66·6	50·8	58·7	80·5	42·4
Oct.	30·405	28·807	29·922	3·82	15	51·4	37·8	44·6	63·0	24·0
Nov.	30·511	28·685	29·885	2·33	16	47·9	35·3	41·6	59·0	19·0
Dec.	30·578	28·868	29·832	3·22	20	44·5	35·0	39·8	54·5	25·0
Year	30·659	28·685	29·962	30·93	179	55·0	41·1	48·1	80·5	19·0

RAINFALL, 1880.

Month.	Total Depth.	Greatest Fall in 24 Hours.		Days on which .01 or more fell.	At Cherry Hill, York.	At Old Malton.
	Inches.	Depth.	Date.		Inches.	Inches.
Jan.	0.29	.14	15	7	.65	.34
Feb.	1.79	.60	16	18	1.68	2.19
Mar.	2.07	1.06	31	9	2.05	2.28
April	2.30	.70	3	19	2.30	2.04
May	2.12	1.11	26	11	2.08	2.23
June	1.55	.37	8	16	1.45	2.33
July	5.21	.95	26	22	5.16	4.56
Aug.	1.66	.58	7	10	1.54	1.15
Sept.	4.57	1.35	11	16	4.21	4.11
Oct.	3.82	1.50	27	15	3.69	4.14
Nov.	2.33	.61	17	16	2.37	2.03
Dec.	3.22	.82	29	20	3.18	3.10
Year	30.93	1.50	Oct. 27	179	30.36	30.50

YORK, 1880.

WIND SUMMARY.—NUMBER OF OBSERVATIONS UNDER EACH POINT.

MONTHS.	NORTH	N.N.E.	N.E.	E.N.E.	EAST	E.S.E.	S.E.	S.S.E.	SOUTH	S.S.W.	S.W.	W.S.W.	WEST	W.N.W.	N.W.	N.N.W.	Calm.	Variable.
January ..	6	2	1	1	0	1	1	3	18	7	3	2	8	3	0	5	1	
February ..	1	1	1	1	2	1	2	3	17	3	2	6	11	3	3	2	0	
March ..	3	2	5	7	19	1	1	3	7	4	0	1	9	0	0	0	0	
April ..	10	2	6	2	4	2	0	1	13	3	2	2	10	0	2	1	0	
May ..	11	2	8	4	7	1	0	1	7	2	3	0	11	1	1	3	0	
June ..	12	0	6	2	6	1	3	0	4	1	6	2	10	1	4	2	0	
July ..	2	2	3	1	4	2	1	3	13	0	6	2	19	0	2	2	0	
August ..	8	6	11	6	8	0	1	1	5	0	2	0	7	2	3	2	0	
September ..	4	0	0	1	1	2	0	2	10	3	6	6	18	1	3	1	2	
October ..	18	4	3	6	2	0	0	0	1	1	0	2	12	4	2	5	2	
November ..	12	1	0	1	1	0	0	1	11	6	1	8	11	2	1	4	0	
December ..	6	2	0	0	0	0	0	4	4	1	5	2	25	3	4	3	3	
Sums ..	93	24	44	31	54	11	9	22	110	31	36	33	151	20	25	30	8	

Thirteen members have been lost to the Society by death during the past year, and sixteen members, six lady subscribers, and five associates have resigned; whilst twenty new members, seven lady subscribers, five associates, and five temporary subscribers have been added to the Society. Among those whose loss the Society mourn are the Honourable and Very Reverend Dr. Duncombe, late Dean of York, one of our Vice-Presidents; and William Gray, Esquire, Honorary Treasurer of the Society.

The Honourable and Very Reverend Augustus Duncombe, D.D., was the fourth son of Charles, first Lord Feversham. Dr. Duncombe was educated at Worcester College, Oxford, and graduated as B.A. in the year 1836. In the two following years he was ordained Deacon and Priest by Archbishop Harcourt, and was afterwards admitted to the Rectory of Kirby Misperton, in this diocese. In 1841 he was promoted by the same Archbishop to the Prebend of Bole, in the Cathedral Church of York, a dignity which he held until his further promotion to the Deanery of York, in the year 1858, by the Crown, on the nomination of Lord Derby, then Premier.

It will be impossible in this brief notice of the Dean's life to do more than to refer to the fact how earnestly he sought to discharge the duties of his high office, and with what zeal he laboured to provide for the spiritual wants of the citizens of York by additional services in the Cathedral and by other means. The late Dean was a munificent benefactor to the fabric of the Cathedral, and during his residence amongst us always took a pleasure in promoting every institution in our City which had for its object either the alleviation of human suffering or the extension of sound learning.

His connexion with this Society commenced in the year 1859, when he became a member of our Council, and subsequently he was nominated one of the Vice-Presidents of the Society. Until a few weeks before the close of his life he continued to take an active part in the administration of the affairs of the Society. The Dean died at York on the 26th day of January, 1880, after a short illness.

Mr. William Gray, for many years our Honorary Treasurer, was the oldest member of our Society. The son of a well-

known and highly respected York family, he was brought up in his father's office as a solicitor, and at the time of his death was the father of the profession in this city. During a long and prosperous life, it was his lot to fill nearly every honourable office open to his profession. For many years previous to his death he had discharged the onerous and important duties of Under Sheriff of this great county. In the year 1844 the Municipal Corporation of York testified their respect to his worth by electing him to the highest civic office, that of Lord Mayor of this City. In all the relations of life, whether as a professional man or as a citizen, Mr. Gray won the esteem and respect of all. He was ever ready to lend a helping hand to others, and did not spare himself in any labours which had for their object the promotion of science, the improvement of his native city, and the welfare of the citizens. Mr. Gray was prominently associated with the Yorkshire Philosophical Society almost from the date of its formation. He became one of its members in 1827, and in the following year was appointed one of its Honorary Secretaries, an office which he held until the death of his father, when he became a member of the Council of the Society, in the management of which he took an active part. In 1855 he succeeded Mr. T. Meynell as Treasurer, which post he held up to the time of his death, when he was the senior member of the Society. Amongst the many branches of study to which Mr. Gray gave his attention was that of Geology, and he was intimately associated with the late Professor Phillips in the promotion of this science, and the acquisition of the magnificent collections in the York Museum. He was a Fellow of the Geological and Astronomical Societies, and possessed an intimate knowledge of the strata of our wide county. In the sciences of Astronomy and Meteorology he was also no mean adept, and spent much time in practical astronomical investigations in his own Observatory, where he had caused to be erected a powerful equatorial telescope. In 1836, with a party of scientific friends, he visited a remote part of Scotland for the purpose of observing a solar eclipse; and, about twenty years later, he visited Norway especially with the view of observing a total eclipse of the sun, taking with him a

powerful instrument for the purpose. He was also a not unfrequent contributor to the Transactions of the Royal Astronomical Society, of which he was a Fellow. By his death the Yorkshire Philosophical Society has lost such a warm and active friend and benefactor as it will be difficult to replace.

Of the British Association, whose jubilee is to be celebrated at York next year, Mr. Gray was one of the first founders, and was one of its joint-secretaries with Professor Phillips; and only a few weeks before his death he had put himself in communication with the Secretary of this Society with reference to the contemplated visit of the British Association to this city, offering some practical and valuable suggestions for securing the success of the meeting.

The Council propose for election as Vice-President, in the room of the late Dean of York, the Hon. Payan Dawnay; and as members of Council, the Very Rev. the Dean of York, Dr. Shann, George Oldfield, and Mr. Alderman Terry, in room of the Rev. R. Daniel, Alfred Spence, William Lewin Newman, and James Melrose, who retire by rotation.

THE TREASURER IN ACCOUNT WITH
THE YORKSHIRE PHILOSOPHICAL SOCIETY
FOR THE YEAR 1880.

Dr.		INCOME.					
1880.		£. s. d.			£. s. d.		
<i>Annual Subscriptions, &c.:</i>							
Members	708	1	0				
Lady Subscribers	72	0	0				
Associates.....	20	0	0				
Arrears	5	0	0				
					805	1	0
<i>Admission Fees of New Members :</i>							
Paid in Full	21	0	0				
Paid by Instalments	37	0	0				
					58	0	0
Keys of the Gates.....					63	5	0
Temporary Subscribers					5	0	0
					931	6	0
<i>Rents:</i>							
St. Mary's Lodge	53	17	1				
Bootham and Marygate Towers	23	10	0				
Swimming Bath.....	40	0	0				
Boat Yard and for Hedge Cutting	5	8	0				
Water Works Co.	0	1	0				
					122	16	1
Gate Money.....	272	8	6				
Sale of Catalogues and Photographs	4	13	0				
Use of Tent.....	42	12	7				
Meteorological Reports ..	15	12	0				
Profits of Whitsuntide Admissions..	5	16	10				
					1395	5	1
<i>Excess of Expenditure 31st Dec., 1880</i>							
	459	2	8				

EXPENDITURE.		Cr.
1880.	£. s. d.	£. s. d.
Crown Rent		1 0 0
Corporation Rent		19 10 10
Water Rent		3 12 6
Rates and Taxes.....		14 19 8
Insurance.....		5 11 6
<i>Salaries and Wages:</i>		
Dr. Purves, proportion to 31st Aug., 1880	133 6 8	
Mr. Keeping from 1st. Sept. to 31st. Dec., 1880.....	80 0 0	
Clerk.....	25 0 0	
J. Davison (Pension)....	26 0 0	
J. Fielden	70 4 0	
Miss Baines, Lodge Keeper	39 0 0	
Attendant, Museum	46 16 0	
Do., Hospitium ..	26 0 0	
Gardeners' Wages.....	125 2 0	
		571 8 8
Yorkshire Insurance Company, in- terest on loan		74 2 0
Interest and Commission to Bankers		42 13 6
<i>General Expenses, Repairs, Alterations, &c.</i>		
New Cases for Geo- logical Specimens as per Contract, viz.—		
Rookledge, Joiner..	265 0 0	
Hartley, Glazier, &c	87 0 0	
Mr. Gerard's Charge for arranging Os- teological Collec- tion.....	54 16 6	
General Repairs and Additions, &c.....	260 18 3	
		667 14 9
Hospitium	68 13 2	
Estate and Observatory	31 11 9	
		767 19 8
<i>Gardens and Greenhouses, &c.:</i>		
General Expenses & Repairs	55 7 2	
Seeds	5 0 0	
Coals and Coke	8 4 7	
		68 11 9
Library, Books, and Binding, &c....		39 6 0
<i>Miscellaneous:</i>		
Printing and Stationery.....		38 13 4
Printing Reports and Copies of Laws		16 4 0
Coals, Gas, and Coke		39 4 7
Expenses of Military Bands		21 0 6
Antiquities		46 15 1
Repairs of Tent.....		15 12 0
Travelling Expenses of Dr. Purves and Mr. Keeping	5 19 2	
Postages of Communica- tions to Members	12 3 0	
Sundry General Expenses	34 8 0	
		52 10 2
Meteorological Reports and Obser- vations		15 12 0
		<u>£1854 7 9</u>
<i>Permanent Debt:</i>		
Yorkshire Insurance Company	1900 0 0	
Due to Two Members, £50 each	100 0 0	
		2000 0 0
Balance due to the Treasurer, 31st. Dec., 1880.....	1378 5 9	
		<u>£3378 5 9</u>

Audited and found correct, York, January 27th, 1881,
E. GRAY, Treasurer. F. L. MAWDESLEY.

NEW MEMBERS.

Adams, James.
 Burton, John, *Clifton*.
 Carnegie, A. St. C., *Union Bank*.
 Creyke, Ralph, M.P., *Rawcliffe Hall*.
 Field, General, *St. Leonards*.
 Fleming, Rev. Canon.
 Gough, Thos. B. Sc., 20, *De Grey Street*.
 Hey, Rev. W. C., *Portland Street*.
 Jones, J. E., *St. Mary's*.
 Purey-Cust, The Very Rev. A. P., *The Deanery*.
 Reid, A. S., *Lord Mayor's Walk*.
 Stubbs, W. J., *The Limes, Clifton*.
 Simpson, Henry, *Holgate*.
 Stephenson, Rev. C. 2, *Bootham Terrace*.
 Spencer, Major, *Annerley Park, Annerley, Surrey*.
 Todd, Wm., *Foss Bridge*.
 Toovey, Rev. H., *Grosvenor Terrace*.
 Willis, General, *Station Hotel*.
 Walker, J. S., *Bootham*.

LADY SUBSCRIBERS.

Davis, Mrs., 39, *Bootham*.
 Fairbairn, Lady, 1, *Clifton Terrace*.
 Monkman, Mrs., 13, *St. John Street*.
 Procter, Miss, 15, *St. John Street*.
 Palmer, Mrs., *Goodramgate*.
 Richardson, Miss, 40, *Bootham*.

ASSOCIATES.

Bright, C. H. C., *De Grey Rooms*.
 Knott, George, *Lendal*.
 Lees, Rev. A. H. P., *Minster Yard*.
 Lindbergh, T. H., *Beech House, Mount*.
 Roberts, E., 22, *Portland Street*.
 Spencer, H. E., *Lord Mayor's Walk*.

RESOLUTIONS

PASSED AT THE ANNUAL MEETING, FEBRUARY 1ST, 1881.

—o—

1. That the Report of the Council now read be adopted and printed for circulation amongst the Members, Lady Subscribers, and Associates of the Society.

2. That the thanks of the Society be given to the Members of Council retiring from office, also to the Treasurer, Secretary, and Curators for their valuable services; and that authority be given to the Council to give admission to the Public to the Museum on Whit-Monday and Tuesday, under the same regulations as last year. Also that the same privilege of admission to the Museum be granted to the members of the British Association, or other learned Societies, during their stay in York.

3. That the thanks of the Meeting be given to the Chairman.

DONATIONS TO THE MUSEUM AND LIBRARY.

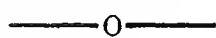
LIBRARY.

BOOKS PRESENTED.	DONORS.
Allen, J. A., The History of N. American Pinnipedes	The United States Government.
Associated Architectural Societies' Reports and Papers	
Atti della R. Accademia dei Lincei, 1879.	The Academy.
Barrande, du maintien de la Nomenclature etablie par M. Murchison	The Author.
Barrande, Defense des Colonies	
„ Les Brachiopodes	Do.
„ Les Cephalopodes	Do.
„ Crustace's divers, et poissons des depôts Silurienne de la Bohême ..	Do.
Bristow's Chart of British Strata	Mr. W. Reed, F.G.S.
Do. do. with Notes by R. Etheridge, F.R.S.	Ditto.
British Association, Report for 1879	
Bulletin of the United States Geological and Geographical Surveys of the Territories, vol. v., No. 4	The United States Government.
Catalogue of Indian Photographs	
Carpenter et Henschel, Glossarium mediæ et Infimæ Latinitatis, vols. I.—VIII.	Mr. Wm. Gray.
Clarke, J. G., The great detonating meteor of February 24, 1879	
Chemical Society, Journal of, for 1880 ..	The Chemical Society.
Davies, R., Walks through the City of York	Rev. Alfred Porter.
Deslongchamps, Le Jura Normand, Livr. I. and II.	
Deslongchamps, Notes Palæontologiques	Do.
Deslongchamps, Memoires sur les Teleosaurians de l'Epoque Jurassique, du Department du Calvados	Do.

BOOKS PRESENTED.	DONORS.
Deslongchamps, 19 memoirs on Palæontological and Zoological subjects	M. Endes Deslongchamps.
Drawings of the glass cases in the S. Kensington Museum	The Department of Science and Art.
Dugdale's Monasticon Anglicanum, vols. I.—VIII.	Mr. Wm. Gray.
Edinburgh Royal Society, Proceedings, Session 1878-9	The Society.
Geikie, Prof. A., LL.D., F.R.S., The Carboniferous volcanic rocks of the basin of the Forth	The Author.
Geology of the Henry Mountains	The United States Government.
Geological Survey of the Territories, 6 vols.	Ditto.
Geological Society, The Quarterly Journal of the, together with the Proceedings of the Geological Society, complete from the commencement up to August, 1880	Mr. William Gray, V.P. Y.P.S.
Geological Society, Quarterly Journal of, for 1880	The Geological Society.
Geological Survey of India, Memoirs of the, vol. XVII, pts. I. and II.; vol. XV., pt. I.	The Geological Survey of India.
Ditto. ditto. (Palæontology) ser. X., parts 4 and 5, and XIII., 2.	Do.
Geological Survey of India, Records of the, vol. XII., part 4; XIII., parts 1, 2.	Do.
Hebert, Prof., Hon. Mem. Y.P.S., Les mers Anciennes et leurs Rivages dans le Bassin de Paris	The Author.
Do. Ondulations de la craie dans le Nord de la France	Ditto.
Do. Description de deux espèces d' Hemipneustes de la craie superieure des Pyrénées	Ditto.
Do. Les Fossiles de la craie du Nord, all by Prof. Hebert, Hon. Mem. Y.P.S.	The Author.

BOOKS PRESENTED.	DONORS.
Harrison, W. J., F.G.S., The Geology of the West Riding of Yorkshire	The Author.
Institution, Royal, of Great Britain, Pro- ceedings, vol. IX., pts. 1, 2, 5, and 6..	The Royal Institution.
James's, Col. Sir Henry, Fac-similes of National Manuscripts, vols. I.—IV. . .	Mr. Wm. Gray, V.P. Y.P.S.
Jordan, Chart of the Geological Strata ..	Mr. Wm. Reed, F.G.S.
Keder, Nummi in Hibernia	Rev. Canon Raine.
Ley, Rev. Clement, Aids to the Study and Forecast of Weather.	The Meteorological Council.
Linnean Society, Journal of the, Zoology and Botany, current numbers	Mr. W. H. Rudston Read, V.P., Y.P.S.
Linnean Society, Transactions of, current numbers	Ditto.
Leeds Literary and Philosophical Society Report, 1880	The Society.
Memoirs of the Geological Survey of India, Tertiary and Upper Cretaceous Fauna of Western India, ser. XIV. . .	The Indian Govern- ment.
Mayer, Joseph, F.S.A., Catalogue of the Gems and Rings in the Collection of ..	The Author.
Memoir of Thomas Dodd, William Upcott, and George Stubbs	Mr. J. Mayer, F.S.A.
Meteorology of the Arctic Regions.	The Meteorological Council.
Meteorological Council of the Royal Society for the period of 12 months, ending March, 1879, Report of the ..	Ditto.
Meteorological Congress at Rome, Report of the Proceedings of the Second Inter- national	The Meteorological Council.
Meteorology of Kerguelan Island, Report on the	The Meteorological Council.
Nathorst, Dr. A. G., Bidrag till Sveriges Fossila Flora	The Author.
Do. Am Floran i Skones Kolforände Bildungar	The Author.
Do. Seven Papers on the Fossil Flora of Sweden	The Author.
Report of the St. Louis Public School Library	The Library Managers.

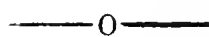
BOOKS PRESENTED.	DONORS.
Roach Smithe, The Shorne, Higham, and Cliffe Marshes	The Author.
Roach Smithe, Holwood and Reston	
Sedgwick, Monograph on the Magnesian Limestone	Rev. Canon Raine.
Sedgwick, The Trap Rocks in High Teesdale	
Sedgwick, Geology of the Lake District..	Do.
Smithsonian Report, 1878	The Rev. Canon Raine, M.A.
Sunshine Recorder, Description of.....	The Smithsonian In- stitution.
Surtees Society, The Publications of the, in 70 volumes.....	Mr. G. G. Stokes, F.R.S. Mr. Wm. Gray, V.P. Y.P.S.
Whitby Literary and Philosophical Society, 57th Report.....	The Society.
Warwickshire Field Club, Proceedings of, 1879	
Wylie, W. M., Esq., M.A., F.S.A., Notice of a Monument at Palanza, N. Italy	Mr. C. Roach Smithe.
Woodward, H. B., Memoir of Samuel Woodward	
Yorkshire College, Calendar of the, 1880-1.....	The Author.
Zoological Society, List of Vertebrates in the Garden of.....	
Zoological Society, Journal of, June, 1880	The Yorkshire College.
	The Zoological Society.
	The Zoological Society.



BOOKS PURCHASED.

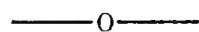
Bischoff, Chemical and Physical Geology.
 Chambers's Cyclopedia of English Literature, 2 vols.
 Dixon's Geology of Sussex, 2nd Edition.
 Fresenius' Chemical Analysis.
 Knight's English Cyclopedia, Natural History, 4 vols.
 Laurent, Chemical Method.
 The Nautical Almanack, 1880-1883.

Rose, Practical Treatise of Chemical Analysis.
 Wilson, Dr. G., Life and Works of Cavendish.
 Zittel and Schimper, Handbuch der Paléontologie.
 Parnell, Applied Chemistry.



SERIAL WORKS SUBSCRIBED FOR.

Birds of Asia, by John Gould, F.R.S.
 Natural History of the Tineina, by H. T. Stanton, F.R.S.
 Nautical Almanack.
 Proceedings of the Zoological Society.
 Publications of the Palæontographical Society.
 Publications of the Ray Society.
 Sowerby's Thesaurus Conchyliorum.
 London, Edinburgh, and Dublin Philosophical Magazine.
 Annals and Magazine of Natural History.
 Geological Magazine.
 Journal of the British Archæological Association.
 Numismatic Chronicle.
 Memoires de la Société Paléontologique Suisse.
 D'Orbigny's Paléontologie Francaise.
 Geological Record.
 Nature.
 Surtees Society, the Publications of.



MUSEUM.

GEOLOGICAL DEPARTMENT.

Fossil Fish, from the Lias of Whitby...	Mr. J. Brown, Monkgate.
Shale with impressions of <i>Avicula con-</i>	} Mr. A. G. Cameron,
<i>torta</i> , <i>Portl</i> , from Rhaetic Beds, Crosby	
Gate, Northallerton	} F. G. S., H. M. Geo-
	} logical Survey.
A series of Fossil Fruits, from the Lon-	} Mr. W. Reed, F.G.S.
don Clay, Sheppey	
A fine specimen of <i>Ichthyosaurus tenuiros-</i>	} Mr. Fielden Thorpe, of
<i>tris</i> , from the Lias of Street, Somerset.	
	} Blossom Street.
A fine collection of Fossils from the	} Mr. W. Reed, F.G.S.
Coralline Oolite of Yorkshire	

DONORS.

Two associated series of bones of <i>Ichthyosaurus</i> and one of <i>Plesiosaurus</i> , from the Cambridge Greensand; three species of <i>Rhynchonella</i> , from the Cornbrash of Yaxley, near Peter- borough; and three specimens of <i>Terebratula bullata</i> , from the Fullers Earth Rock of Whatley, near Frome.	Mr. J. F. Walker, M.A.
About 300 specimens, mostly Brachio- pods, from the Neocomian deposits at Brickhill, Bedfordshire	Mr. Walter Keeping, M.A.
Twenty specimens of Portlandian Fossils	Rev. W. C. Hey, M.A.
A group of <i>Melonites multipora</i> , from the Carboniferous Limestone of St. Louis, Missouri	Mr. Wm. Reed, F.G.S.
Seven bones of the Great Auk, from Funk Island, N. America	Purchased.
About 100 specimens, mostly Brachiopods and Saurian bones, from the Neocomian of Brickhill, Bedfordshire	Mr. J. F. Walker, M.A.
Twenty-five Fossils of various ages....	Mr. Wm. Gray, F.R.A.S.
Two Flint Celts and a Flint Scraper, from the Brandon Interglacial deposits, Norfolk, also 30 other Flint Imple- ments, mostly of Neolithic type	Purchased.
A Molar Tooth of the Mammoth (<i>Elephas primigenius</i>), from the gravel at Grant- chester.....	Mr. Wm. Reed, F.G.S.
Several species of Brachiopods, from the Cornbrash	Mr. J. F. Walker, M.A.
The collection of Fossils formed by the late Edward Wood, Esq., of Richmond, Yorkshire. The Collection contains over 10,000 specimens—(See special report).	Mr. Wm. Reed, F.G.S.

ZOOLOGY.

DONORS.

A series of Yorkshire Land and Fresh-water Shells, together with a number of the Marine species	Rev. W. Hey, M.A.
Two species of Flying Fish, <i>Exocoetus volitans</i> , and <i>E. exiliens</i>	Mr. Tom Smith, St. Helen's Square.
The Duck Mole (<i>Ornithorhynchus paradoxus</i>) shot on Lake Cooper, Victoria, Australia.	Harry Leigh Atkinson, Esq., M.D.
Double yolked Egg	Mr. W. Taylor, of Poppleton.
Piece of hide of Hippopotamus, and a Fish preserved in Spirit.	Mr. F. B. Norcliffe, of Langton Hall.
Twelve specimens of the Venus's Flower Basket, (<i>Euplectella aspergillum</i>), and a glass rope sponge, (<i>Hyalonema</i>)	Mr. Wm. Reed, F.G.S.
A large specimen of <i>Anodon cygneus</i> , from Fairfield, York	Mr. Wood, Goodramgate.
The skeleton of the celebrated racing mare, "Blink Bonny," winner of the "Oaks" and "Derby," 1857	Mr. Wm. T'Anson, of Malton.
The four jaws of a Horse and Mare cut to shew the dentition	Mr. Wm. Reed, F.G.S.
Jaws of Red Deer (<i>Cervus elaphus</i>), cut to shew the dentition	Do.
Two Large Skulls, with Lower Jaws of <i>Hippopotamus amphibius</i>	Do.
A Skull, also an Upper Jaw, and two extra Tusks of the Wart Hog, <i>Phacochoerus Africanus</i> , Gm	Do.
Eleven Tusks of Hippopotamus, one of them very large, and incurved to form a complete circle	Do.
Skull of an Otter (<i>Lutra vulgaris</i>)	Do.
Skull of an Armadillo (<i>Dasypus septemcincturus</i>)	Do.
Skull of Common Cat	Do.
Skull of Badger (<i>Meles taxus</i>)	Do.
Four Large Teeth of the Sperm Whale ..	Do.
Two skulls of Tapir (<i>Tapirus Americanus</i>), Gm	Do.

DONORS.

Skulls of <i>Hyæna crocuta</i> and <i>H. striata</i>	Mr. Wm. Reed, F.G.S.
Very Large Skull of Tiger (<i>Felis tigris</i>), Linn.	Do.
Skull of Dog (<i>Canis familiaris</i>).....	Do.
Skull of Polar Bear (<i>Ursus maritimus</i>), Linn.	Do.
Skull of Ferret (<i>Mustela furo</i>), Linn	Do.
Skull of Seal (<i>Phoca Groenlandica</i>)	Do.
Skull of Australian Bat.....	Do.
Skull with Antlers of Reindeer (<i>Cervus</i> <i>tarandus</i>)	Do.
Four fine Tusks of Walrus (<i>Trichechus</i> <i>rosmarus</i>); also a skull of the same, divided to shew its structure.....	Do.
Skull of Narwhal (<i>Monoden monoceros</i>), shewing both Tusks; also two extra Tusks of the same, measuring 8ft. 2in., and 3 ft.....	Do.
Large Tusk of Mammoth, from Siberia..	Do.
Two molar Teeth of the African Elephant	Do.
Four Do. Indian Elephant }	Do.
Two of them cut to shew structure ..	
Large Tusk of African Elephant, with double curve.....	Do.
Skull of Monkey, sp. ?.....	Do.
A Black Rat (<i>Mus Rattus</i>), from Lundy Island.....	Do.
Skeleton of the English Snake (<i>Coluber</i> <i>natrix</i>)	Do.
Skull of Serpent (<i>Python tigris</i>)	Do.
Crocodilian Skull.....	Do.
The Port Jackson Shark (<i>Cestracion</i> <i>Philippi</i>)	Do.
A Ray (<i>Rhinobatis granulosus</i>), male, with claspers.....	Do.
Skull of the Porbeagle Shark (<i>Lamna</i> <i>cornubica</i>), Linn.	Do.
The Arctic Chimaera (<i>Chimaera monstrosa</i> , Linn	Do.

DONORS.

The Southern Chimaera, (<i>Callorhynchus</i> } <i>antarcticus</i>)..... }	Mr. Wm. Reed, F.G.S.
Two Jaws of Shark (<i>Galeus ferox</i>) } from the Red Sea, and <i>Carcharias</i> }	Do.
Vertebral Column of a Shark, and of the } Tunny Fish }	Do.
Skull of Carp, and of Cod Fish.....	Do.
Skull and Vertebral Column of the } Angler (<i>Lophius piscatorius</i>)..... }	Do.
Snout of a Saw Fish (<i>Pristis</i>)	Do.

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BOTANY.

The following Specimens have been added to the Gardens.

No.	DONORS.
1 <i>Sedum</i> spathulifolium	W. H. Rudston Read, Esq.
2 <i>Thymus palavinus</i>	Do.
3 <i>Veronica alpinus</i>	Do.
4 ,, <i>pinguifolia</i>	Do.
5 ,, <i>Guthriana</i>	Do.
6 ,, <i>pectinata</i>	Do.
7 ,, <i>Girdwoodiana</i>	Do.
8 <i>Bahia lanata</i>	Do.
9 <i>Pelargonium lateripes</i> — <i>var</i>	Do.
10 <i>Linum trigynum</i>	Do.
11 <i>Torcenia Asiatica</i>	Do.
12 <i>Euterpe edulis</i>	Do.
13 <i>Begonia Ascotensis</i>	Do.
14 ,, <i>discolor</i>	Do.
15 <i>Achimenes metallica</i>	Do.
16 <i>Eulalia Japonica</i>	Do.
17 <i>Arica rubra</i>	Do.
18 <i>Sabal umbraculifera</i>	Do.
19 <i>Curculigo recurvata</i>	Do.
20 <i>Phoenix rubicula</i>	Do.
21 <i>Geonorma Verschaffilzi</i>	Do.
22 <i>Selaginella Pruiti</i>	Do.

DONORS.

23	Selaginella Krausiana aurita	.....	W. H. Rudston Read, Esq.
24	„ „ variegata	....	Do.
25	„ Martensi „	....	Do.
26	Libonia Reedii „	....	Do.
27	Gloxineas (Seedlings)	....	Do.
A Sycamore Tree (<i>Acer pseudo-platanus</i>)			Mr. Wm. Reed, F.G.S.

—O—

ANTIQUITIES, ETC.

DONORS, &c.

A Mediæval Vessel and a Pewter Pot, dated 1638, found in the Ouse at Bishopthorpe; also 15 Dutch Tiles from a house in Friargate	Purchased.
A Stone-ware Pot, found in St. Samp- son's Square; with many rubbings from brasses made by his brother, Mr. F. Bell	Mr. T. Bell.
A 17th Century Jug	Mr. G. Acton
A Small Copper Plaque, representing the Conversion of St. Paul, found in Coverham Churchyard	Rev. C. B. Norcliffe.
Mediæval Vessels, Coins, and a Ring, found in the Ouse when dredging	Purchased.
A Brank, an Iron Instrument for the punishment of scolds	Lady Mary Thompson.
Two Celts from Wetwang, a large dish with the figure of Prince Henry upon it, and other Pottery	Purchased at Beverley.
Two Mediæval Stone Coffins	The Rector and Church- wardens of St. Saviour's
170 Denarii found in 1848 in a Roman Vessel at Boston Spa	Purchased.
A Large Moorish Tile from the Alhambra	Mr. W. Atkinson.
The Ancient Saxon Font of Hutton Cranswick, E. R. Y.	Rev. F. Pudsey.
A large number of Implements in Obsi- dian, etc., from Mexico	Anonymous.

DONORS.

A Roman Gold Finger Ring, set with a Carnelian, bearing a bird	Purchased.
Two Roman Vessels found near the White House.....	Mr. Spenser.
A Roman Jug, and Three Seals of Arms, 18th century, etc.	Rev. A. S. Porter.
The Mace of one of the York Sheriff's..	Mr. T. Bowman.
A Roman Inscribed Stone, from Haslehead, near Whitby	Messrs. Foster, Egton..
Several Anglian Relics found at Londesborough	Lord Londesborough.
Six Roman Seals of Lead found at Brough	Rev. Dr. Simpson, Kirkby Stephen.
Three Roman Stone Weights, etc., found in Micklegate.....	Purchased.
A Roman Instrument of Bone for knitting or netting	Mr. E. Allen.

COMMUNICATIONS
TO THE
MONTHLY MEETINGS
OF THE
YORKSHIRE PHILOSOPHICAL SOCIETY,
1880.

The collection of fossils formed by the late Mr. Edward Wood, F.G.S., of Richmond, Yorkshire, is the result of the constant attention and labour of more than 30 years of his lifetime.

Living in a district rich in some of the most beautiful and attractive fossil organic remains, and impelled by a strong natural love for such objects, Mr. Wood became an ardent collector of all specimens of Geological interest; and such was his success that he ultimately became distinguished as the possessor of one of the finest private Geological collections in Britain.

Naturally this collection is particularly rich in objects from the Yorkshire Dales, especially his own dale, Swaledale; but it also includes collections from many other British localities, which were obtained by the help of his scientific friends and acquaintances, in his own travels, or by his liberal purchases. Thus the collection came to spread over a wide area both in space and time, forming a general collection, fairly representing the whole of the geological periods, but specially rich and valuable in certain formations.

To the York Museum this collection is particularly valuable, for it is precisely where we were poor that we here find the greatest riches. It was in the Permian, Coal measures, Carboniferous limestone, and Old red sandstone that our collection,

including Mr. Reed's original Museum, was weakest, while in the Wood collection these groups are most perfectly represented.

Mr. Wm. Reed, F.G.S., our Honorary Curator of Geology, was already acquainted with Mr. Wood's collection, and knew how important an addition it would be to the Society's Museum, and he therefore, as soon as the way to its obtainment was open to him, at once decided to purchase the collection and present it to the Society.

As a private collection of Carboniferous limestone fossils Mr. Wood's Museum has never been equalled in England; and the other groups of the Upper Palæozoic rocks are also particularly fine. It is without doubt in the carboniferous Echinoderms, especially the Crinoids, that the collection is most remarkable, and it is best known to geologists as containing a magnificent series of those crinoids, or "sea lilies," named, in honour of their discoverer, *Woodocrinus*. Some hundreds of specimens of this beautiful fossil were obtained by Mr. Wood, the duplicates being liberally distributed throughout the various museums of Europe, while some 80 slabs, including all the more choice examples, remain in the collection. Many of the slabs contain several heads, some of them exhibiting as many as 9 distinct individuals, so that we have altogether a very forest of these beautiful sea lilies.

The spot where they were found is in a quarry at Lymmas House, Holgate, near Marske, a place in Swaledale, some 13 miles from Richmond, and rather difficult of access. They have not, to my knowledge, been found in any other locality.

Another special feature in Mr. Wood's Museum is the collection of "Lamp Shells," or Brachiopods. These were arranged separately in the cabinets at Richmond, and it is clear from his wide-ranged collecting and careful arrangement that Mr. Wood devoted special attention to this group. The finest of these shells are from the carboniferous limestone of Yorkshire and Derbyshire, but they cover the whole of the geological series, and include many fine groups from the Permian, Lias, Oolitic, and Cretaceous formations.

There are numerous type specimens, principally crinoids and Brachiopods, in the collection, figured and described in various

publications, mostly in the beautiful monographs of Mr. Davidson in the Palæontographical Society's works, and of Professor De Koninck, of Liege. These are mentioned in detail below.

Altogether the collection numbers over 10,000 specimens, there being, according to a calculation by Dr. Henry Woodward, 9,365 selected specimens in the cabinets.

Next, taking account of the collection in chronological order, we find—

1. In the Precambrian rocks an interesting example of Eozoonal Marble from County Donegal.

2. In the Cambrian and Silurian rocks a general series of 968 specimens, amongst which the Trilobites from the Tremadoc rocks, and the Trilobites, Crinoids, and Brachiopods from the Dudley Limestone, deserve especial attention. A magnificent slab of *Periechocrinus moniliformis*, measuring 2 feet 4 inches square, contains 12 separate heads.

3. The Old Red Sandstone is represented by a valuable collection (about 80 specimens) of the remarkable Ganoid Fishes of that period from Scotland. The species are—

Holoptychius Andersoni.

Pterichthys Milleri.

Pterichthys latus.

Glyptopteris leptopterus.

Osteolepis major.

Cocosteus oblongus.

Cocosteus decipiens.

Diplacanthus crassicornis.

Cheirolepis Cunningiæ.

Cheiracanthus microleptopterus.

Dipterus macrolepidotus.

Pteraspis, and

Cephalaspis Lyelli.

There is also a small series of corals from the Devonian rocks of the south of England.

4. The Carboniferous fossils form, as already stated, the special feature of the collection, the greatest riches being from the Carboniferous limestone. Nearly 4,000 selected specimens were arranged in the cabinets at Richmond, besides which there

are large numbers of duplicates stored in boxes. All the great zoological groups of the period are represented, but the Crinoids, Trilobites, Brachiopods, and Fishes are particularly fine.

The localities are mostly Yorkshire and Derbyshire, but other countries, especially Northumberland, Ireland, Scotland, and N. America are also well represented. There is a set of corals, mostly polished, from the Bristol limestone, and of crinoids some 300 very choice specimens, belonging to numerous species. These include six species of *Woodocrinus* — *W. expansus*, *W. dichodactylus*, *W. macrodactylus*, *W. goniodactylus*, *W. longidactylus*, and *W. fimbriatus*, with the type specimens of each; also the beautiful figured type of *Hydreionocrinus Woodianus*. The *Echinoidea*, or sea urchins, are represented by the *Archæocidaris Urii*, *Melonites Etheridgii*, and *Palæchinus sphericus*, the latter being the figured specimen.

The Carboniferous Trilobites, of which there are 95 specimens, belonging to the genera, *Phillipsia*, *Griffithides*, and *Brachymetopus*, also form a valuable part of the carboniferous series. The Brachiopods are extremely choice, numbering over 1,200 selected specimens, and including 7 figured types drawn and described by Mr. Davidson in the monographs of the Palæontographical Society.

The remaining groups of the Mollusca are also well represented, there being many choice specimens.

In the Coal Measure group the land Flora is very fully and beautifully illustrated by some 220 specimens of Ferns, Tree Ferns, *Equiseta*, and *Lycopods*, found in the coal shales and sandstones of Yorkshire, Durham, Newcastle, Edinburgh, Somerset, and elsewhere. From Ireland we have large fronds of the noble fern *Adiantites Hibernicus* out of the Kiltorcan sandstone.

Of the Fishes of the coal period there are 90 specimens, including some very fine *Gyracanthus* and *Pleuracanthus*, and the figured type of *Amphicentrum granulosum*; also good examples of *Megalichthys*.

5. The Permian rocks are far from being so prolific of organic remains as the carboniferous, but Mr. Wood's collection of their fossil contents is unusually rich and complete. They

are principally Fishes, Plants, and Shells, and in the two former the collection is specially excellent. Forty-two beautiful fishes are from the neighbourhood of Midridge, in Durham, one of them, namely, *Dorypterus Hoffmanni*, being the figured type,

The other species are—

Pygopterus mandibularis.

Palæoniscus elegans.

„ *comptus*.

„ *varians*.

„ *glaphyrus*.

„ *altus*.

„ *longissimus*.

Platysomus macrurus.

Coelacanthus granulosus.

Acrolepis Sedgwickii, and

Platysomus striatus.

The Plants number 49 specimens belonging to the species *Caulerpites selaginoides* and *Voltzia Phillipsii*.

The large concretionary rock masses, 15 in number, from Sunderland, also deserve attention.

6. From the Rhætic rocks there are a few Shells and Insects' wings, also fifty minute Fish Teeth from the Triassic drift, collected by Charles Moore, Esq., of Bath.

7. The Jurassic collection (Lias and Oolite) numbers over 1,300 specimens. It is valuable for its excellent Brachiopods, of which there are 466 selected specimens, including some of the interesting diminutive types from the Lias and Inferior Oolite of Bath.

There is a very perfect example of a small *Ichthyosaurus* skeleton, measuring 3 by 1 feet, also the jaws, paddle and other portions of *Ichthyosaurus*, all from the Lias of Lyme Regis. Also a beautiful head, with part of body of a fish (*Pachycormus*), from the Lias of Ilminster.

A fine example of *Ammonites stellaris*, over 2 feet in diameter, is cut and polished to shew its internal structure.

In the Yorkshire Oolites the plants from the Estuarine series of the coast are the most noteworthy.

8. The Cretaceous series has the same general characteristics as the Jurassic, namely, moderate in the series of Mollusca, but rich in Brachiopods, and with some valuable Reptile bones (*Iguanodon*) from the Wealden of the Isle of Wight. The Brachiopods number 300, and there are in all 760 cretaceous fossils.

9. In the Tertiary groups the collections are of a general character, and require but little special reference. They amount to nearly 1,000 specimens, belonging to each of the subdivisions of the period.

10. In the Quarternaries is a series of 186 specimens from the Scotch Drift, and a number of peat-stained bones from the neighbourhood of Richmond.

It will readily be seen from the above account that this collection is a most important and valuable addition to the York Museum. Rarely, indeed, can it be the good fortune of any museum to receive so rich an accession to its treasures. All the specimens are well selected, and indeed the whole collection is marked by the discriminating hand of one who greatly loved good specimens, and spared no trouble or reasonable expense in their acquisition. This general excellency of the specimens well befits them for taking their place amongst the great collection formed by Mr. Reed himself, and presented to the Society some two years ago.

Four great collections have been formed in Yorkshire during the last half century, namely, those of Mr. Bean and Mr. Leckenby, of Scarborough; Mr. Wood, of Richmond; and Mr. Reed, of York. Of these, a considerable part of Mr. Bean's fossils were purchased by the Society in the year 1860 for the sum of £200; and two of the others, namely, Mr. Wood's and Mr. Reed's, have, by the public spiritedness and liberality of the latter gentleman, found their abiding place in the York Museum. The Leckenby collection is in the Cambridge Museum.

Mr. Reed's original collection far exceeded any of the others, consisting as it does of over 100,000 specimens. The Society is now indebted to him for the further magnificent gift of the Wood collection, by which our principal deficiencies give place to great richness.

This account would not be complete without a reference to a catalogue made two years ago by Dr. Henry Woodward, of the British Museum, by whom it is now kindly given to the Society. This catalogue will be preserved in our Library, to remain a permanent record of the details of the collection.

NOVEMBER 2ND.—THE REV. CANON RAINE read a short paper, in which he gave some new facts relating to St. Mary's Abbey. He said :—‘The notices which I have to offer about St. Mary's Abbey are notelets merely, and deserve comparatively little attention, still they have a value of their own, and help to build up the history of a fabric which must always be full of interest. 1. Let me speak of the choir, some of the beautiful ruins of which still exist. In 1270 the Norman choir was in a dangerous state, and it was found necessary to remove the high-altar from the chancel, most probably into the nave or transept. The chancel would then be boarded off and the work of demolition would begin. On the 9th of June, in the following year, the foundation stone of the new choir was laid by the great Abbat, Simon de Warwick, who, seated in his official chair, whilst his monks were standing around, laid the mortar in which the first stone was bedded. The stone for the building was brought from a quarry in Thevesdale, on Bramham Moor, which had been granted to the church by John de Vavasour. 2. Let me now mention some new facts about the great central tower. In 1278 the progress of the new chancel had been so considerable that it was necessary to begin with the tower, and as we may conceive that the means of the convent would be by this time very deeply dipped into, it became desirable to seek for extraneous help. Accordingly we have among Dodsworth's MSS. at Oxford a copy of a document issued by Archbishop Giffard promulgating an indulgence of 40 days to all who gave their aid to the work. This indulgence is not found in the Archbishop's Register, which is still preserved, but it is probable that Dodsworth found and transcribed the original document among the archives of the monastery itself, in St. Mary's Tower. It is evident that the great central ornament of the Abbey consisted

of a tower surmounted by a tall spire of wood, covered with lead. You can still see the four stout pillars which supported it. As to the fate of this Tower, happily there are preserved, also among Dodsworth's MSS. at Oxford, two or three leaves of an old Northern MS. Chronicle, on one of which is recorded the fact that, at sunrise, on St. James's day, 1376, in a great storm, this spire of St. Mary's was struck by lightning, and set on fire, and, with the Tower itself, and bells, was burnt and ruined. Some sixty years after this, the central spire of Durham Cathedral perished in a similar manner, and it was the frequently occurring fate of spires in different parts of the country. There is evidence to show that the monks of St. Mary's speedily endeavoured to repair their loss, but we have nothing to indicate the character and architectural features of either fabric. And now let me say something on a point which, two or three years ago, made some little controversy in the public prints. I allude to the old gateway, which used to be the sole entrance to the Blind School. In 1266 the Abbat and Convent of St. Mary's surrounded their precinct with a large stone wall, the greater part of which is still in existence. They permitted no access to the monastery except through the great entrance in Marygate, or by the river, of the frontage to which, for a considerable distance, they were the sole proprietors, and from the enjoyment of which they shut the public out. In the beginning of the sixteenth century the City of York was honoured with several visits from the Princess Margaret, daughter of our Henry VII. The citizens generally were most demonstrative in their loyalty, and the Abbat and Convent of St. Mary's, rivalling the city in its greeting, manifested their delight in a most remarkable way. The Princess was to sojourn on one occasion in the Abbey, and to save her the trouble of a long journey down Bootham and Marygate, the wall near Bootham Bar was broken through—a gateway made through which the Princess could pass, and a tower erected, to serve as a porter's lodge. The tower you can still see, but the gateway is not that through which the Princess went, but a restoration of it, very badly done, and at a comparatively recent period, probably about two centuries ago.

This is clearly shown by the character of the masonry. The future of the ruins of St. Mary's Abbey is a subject which no one can contemplate without apprehension and concern. They are suffering from the ever-increasing effects of atmospheric influences by which they will sooner or later be destroyed. The beautiful vine-leaves which ornament the hollows of the great west door, become every year fainter and more indistinct. When I first saw, 35 years ago, the equally beautiful door which leads from the vestibule into the ruined Chapter-house, the carving was exquisitely crisp and delicate. Now, it is mouldering away so rapidly that, if it is to be saved at all, it must be put under cover without farther delay. It may seem cruel to remove the stones and set them up in the Hospitium, but some such severe remedy must be attempted before long if the sculptures are to be preserved. Another desideratum is the proper exhibition of the remains of the chancel. There has been too much of a tendency to subordinate the ruins to the garden, instead of subordinating the garden to the ruins. What I recommend, and what is adopted in other places, as for instance at Fountains Abbey, is this, to clear away the soil and debris to the old floor level, that we may see the old lines, and expose the bases of the pillars, the remains of the encaustic pavement, and such monuments as remain. The difficulty here is the presence of several large chestnut trees, which must be allowed to fall into the decay which is so imminent, and which, on no account must be renewed. All trees and earth must be removed from within the walls of the abbey. And more than this. It is necessary that on the north side of the chancel the buttresses and walls should be properly shown, and for this the earth between the church and the new garden, or the greater part of it, ought properly to be taken away. We shall never know the character of the architecture, or ascertain how the old church and the new are mutually connected, unless this earth is removed.

DECEMBER 7TH.—MR. T. S. NOBLE, the Hon. Secretary, read a Paper by the REV. CANON RAINE, who was unavoidably absent. The paper was as follows:—"On one of the last days

in the month of October a very curious discovery was made in the garden of St. Mary's Convent, near Micklegate Bar, in this city. A new wing is to be added to that building contiguous to Nunnery Lane, and, whilst making the necessary excavations, at a depth of four or five feet, the labourers came upon three small domestic altars and the greater part of a large statue, which were huddled together, and had evidently been buried for the purpose of concealment. The Romans, when they deserted Eburacum, did not wish to expose these evidences of their domestic worship to the neglect or wantonness of those who came after them. In 1870 as many as seventeen altars were discovered at Maryport, in Cumberland, which had evidently been secreted. There is every reason to hope that similar discoveries will be made in York from time to time. The place where the relics at the Convent were deposited is the site of a Roman cemetery, and, two or three feet below the altars, in their immediate vicinity, the remains of the dead were discovered. Those who hid these sculptured stones probably imagined that they would escape observation, as they expected that no one would care to disturb the bodies of those who had been interred below.

I. The smallest altar in the series is only eleven inches in height, and is very clearly inscribed—

DEO VE
TERI
PRIMVL
VS VOL.
M.

which may be thus extended—*Deo Veteri Primulus Volusius (or Volusianus) merito?* The contracted name *Vol.* already occurs on the base of a statue of Eternity in our Museum. I suppose that the last letter in the inscription, *M.*, stands for *Merito*, one of the four words which constitute the usual formula upon altars and tablets. I am not aware, however, of another instance in which *Merito* stands by itself, and the solution of this difficulty must be left to those who are more skilled in epigraphy than I am. And now who is the *Deus Vetus* to whom this little altar is dedicated? Occasionally we find the word written *Vitus*, the sound of *Vitus* and *Vetus* being prac-

tically the same. There have been as many as seventeen altars discovered in the North of England which are dedicated to this deity, one of which, from the Roman Wall, has been for many years in our Museum. There are thirteen others which are dedicated to the *Dei Veteres*, or the *Numina Vitira*. All these words are parts, I doubt not, of the adjective *Vetus*, although it is quite possible that ignorant people from long and indiscriminating use coined at last a deity of the name of *Viteris* or *Veteris*. On an altar at Netherby, in Cumberland, *Vetus* or *Viteris* is associated with an obscure deity of the name of Mogon, but as there is no doubt as to the reading of this inscription, it is unnecessary to dwell upon it. Dr. Bruce, and other scholars, are struck by the prevalence of altars, with these curious dedications, in the North of England. It is plain that the faith of many was in a curious state, when, amid the host of new deities which thronged the Roman pantheon, they could burn incense and pay their vows to the ancient deity or deities, without apparently being able to remember and record their names. It is comparatively easy to understand who were the *Dei Veteres*, but who, *par excellence*, was the *Deus Vetus*? Dr. Bruce seems to think that Mithras, the Sun-god, was the deity intended. Dr. McCaul, of Toronto, a very distinguished epigraphist, makes the general remark that altars with such dedications were a protest, probably by Britons, against the flock of new divinities by which the old were being gradually thrust out.

II. An altar, 17 inches in height, and very nicely wrought and ornamented. The sides are fluted, as with reeds, and retain traces of red paint or *minium*. The inscription is as follows, given at length—

C.IVLIVS
CRESCENS
MATRI
BVS DO
MESTICIS
V. S. M. L.

The four last letters, one of which is out of its accustomed place, constitute the formula *Votum Solvit lubens merito*. It is also unusual to find the name of the divinity placed after that of the

dedicator of the altar. The dedicator here is a person with the names of *Caius Julius Crescens*, who may perhaps be identified with *Julius Crescens*, who dedicated an altar to Mercury, which was found at Birrens, in Scotland. The *Matres Domesticæ* are the presiding deities of the house and home. Two altars ascribed to them have been already found in Britain, both of them in the neighbourhood of Carlisle. The worship of the mother goddess was very popular in northern Europe, and our learned archæologist, Mr. Charles Roach Smith, has given in more than one of his works a most interesting account of it. They are generally represented in sculpture as "three seated figures holding baskets of fruit in their laps," and various titles are given to them, indicating often the native country or town of the dedicator, who was far removed from it. The *Matres Transmarinæ* are sometimes appealed to. There are about thirty altars in Britain dedicated to the *Deæ Matres*, all of which, with the exception of two, are in the North of England. We have three of these with inscriptions in our own museum, one of which honours the mothers of Africa, Italy, and Gaul, who had charge of the Sixth Legion Victorious. Another, made by Marcus Rustius Massa, is to his own mothers, meaning, probably, those of his own country and home. *Matres Suce* are therefore partly identical with *Matres Domesticæ*, to whom the C. Julius Crescens burnt his incense, and ascribed the comforts and joys with which, we hope, his house and home were filled.

III. An altar, thirteen inches high, made of coarse sandstone, on which the letters are somewhat worn and rubbed. The inscription is peculiarly interesting, and may, I think, be read with tolerable accuracy now that the damp has exuded from the stone. I omit the contractions :—

DEO MARTIC
AGRIVS
ARVSPEX
V. S. L. M.

It is dedicated to Mars, the God of War, by Caius Agrius, the soothsayer or diviner. Mars, under various titles, was greatly honoured among the Romans, especially in Britain. In the South of England his name occurs nine or ten times on metallic objects, and four times upon altars. This is the forty-eighth

instance in which a dedication to Mars has been found in the North. And when we remember that the Roman power in the far north was never permanently established, it was natural that they should look for the protection of Mars, who was to lead them into victory. The name of *Agrius*, which appears upon the stone, is common enough in inscriptions abroad, but occurs here for the first time in Britain. The word *aruspex* is equally rare in this country. The *aruspices* or *haruspices* were soothsayers and diviners, who brought originally from Etruria to Rome the mysterious lore of that ancient country. In the time of the empire there was a college at Rome of sixty *haruspices*, and, although often discredited, the body seems never to have died out whilst the empire lasted. It was their object to interpret to men the will of the gods, and to divine what was coming to pass. The entrails of sacrificed animals, the character of the fire that consumed them, the cries and flights of birds, sights and sounds, and natural phenomena of all kinds, these were the field from which the *haruspices* professed to learn the will of the gods. We know already from the Life of the Emperor Severus that at the close of his days the signs were against him, showing that the *haruspices* were at that time represented in Eburacum. This sculptured stone is the first occurrence of the name in any inscription in Britain. And to whom could *Caius Agrius*, in his own opinion, better address his vows than to the God of War, the knowledge of whose will could ensure his own worldly prosperity and renown, as well as the honour of his country.

IV. The last product of these excavations is a statue in light-coloured grit, deficient in the feet and right arm from the shoulder, but still five feet and a half high, and strikingly fine. It is probably the work of a native sculptor, who has had a marble figure as his model. The figure is in military dress, wearing a noble helmet, with his hair in fillets close to the forehead. A belt, passing over the right shoulder, holds a sword. The left hand is resting on a large oval shield, more than two feet high, with a boss in the centre. The legs are greaved. In the missing right hand there must have been a lofty spear, probably of metal. Statues of any kind are so rare in this country that fine work such as this figure exhibits must always

excite considerable interests. It is impossible, of course, to say "what man or god" is represented, but I am inclined to think that this statue, as well as one or two others in the North, are intended to pourtray the God of War. We cannot fail to remark, in conclusion, how this discovery connects Eburacum in epigraphy with the Stations on the Wall. Our city was the great military depôt of that most important district, and the Sixth Legion, which had its headquarters with us, was the great moving and directing power in the North. If we want to know how *Mars*, the *Deæ Matres*, and the *Deus Vetus* were honoured, we must examine the discoveries in the great fortified posts on the line of the Wall. One word more. It is, I believe, the earnest wish of the people of York that the curious remains which I have been describing should, when the excavations are completed, find their way into our Museum. No one could have been kinder or more helpful to me in my examination of these sculptures than the Reverend Mother and the other authorities of the Convent, and I feel very unwilling to ask them to consent to a surrender which would practically remove these objects for ever from their sight. But our whole Museum is an example of sacrifice for the public good. By themselves, such objects lose half their value; when associated with others we begin to see what Eburacum must have been like. It has been said more than once by scholars of repute that Eburacum could not have possessed the importance ascribed to it, as it can show so few traces of the dignity which it claims. That slur, we are thankful to say, is being removed gradually but surely. It cannot be effected, as some of you know, without considerable exertion and labour. But it is the sympathy and co-operation, not of one but of all, that we require. The Yorkshire Philosophical Society has experienced for nearly sixty years the generous kindness of the people of York, and is proud to recognise long ago on her list of benefactors the authorities of the Convent.

MAY 4TH.—The Honorary Secretary, Mr. T. S. NOBLE, F.G.S., gave an account of the scientific work of Professor

E. E. Deslongchamps, who was recently elected an honorary member of the Society.

Mr. NOBLE said that M. Deslongchamps was one of the most distinguished of the French savants and palæontologists. His writings and original researches and discoveries in the Jurassic rocks of Normandy, embodied in a series of publications extending over a period of some twenty-five years, are well known and highly appreciated. Their value as works of reference is greatly enhanced by being copiously illustrated with a series of well-executed and accurate plates, lithographed by the author. His most important work, now in course of publication in parts, has for its title, "The Jura of Normandy," being palæontological studies of the different rocks and strata of which it is composed, and containing the descriptions, with plates, of all the fossil Vertebrata and Invertebrata. The first part of the serial, issued in 1877, is principally, but not exclusively, devoted to a description of the Reptilia and Cephalopoda; the second, and at present the last, being a continuation of the same subjects, the Cephalopoda being more largely illustrated. The author has not confined his researches and studies to palæontology, recent ornithology being one of the subjects with which he is familiar. The photographs which he had presented to the Society were of more than passing interest to the citizens of York, as they recalled to the mind of most Englishmen an incident in the life of William the Conqueror before his memorable conquest of England at Hastings. It has been a fact well known to historians that at the time of William's marriage an impediment existed to its legality, the nature of which has never been correctly ascertained; but the act drew down upon him the censures of the Church, which were not removed for many years afterwards. It has been supposed that the marriage was one of the many cases of spiritual affinity which the Church of Rome disfavours unless specially allowed by dispensation. By the aid of Lanfranc, then the head of a religious house in Normandy, and who was sent by William to advocate his cause at the Court of Rome, he obtained, after considerable delay, the required dispensation legalising his marriage. Whether in condonation of the offence,

or as a condition attached to the dispensation, is not known, but the result was that William and his wife, as some sort of reparation for the scandal created, each built and endowed a church in the town of Caen, in Normandy, then one of the principal cities in his duchy. The two churches were erected, and are now known as the “*Abbaye aux Hommes*” and the “*Abbaye aux Dames*,” and photographs of each, through the kindness of M. Deslongchamps, are now in the possession of the Society. A considerable part of the ancient structures still remains. The “*Abbaye aux Dames*,” the church built by William’s consort, was dedicated in the memorable year of the conquest, on the eve of William’s expedition, the success of which made him absolute master of England. In this church Matilda offered her prayers for the success of her husband’s arms, and in it she was buried. In the church built by William a large blue stone still marks the spot where the Conqueror’s remains were laid, but the grave has been long since desecrated, first by the Huguenots, in the 16th century, and still further by the Revolutionists, in the 18th century.

JUNE 1ST.—The Honorary Secretary, Mr. T. S. NOBLE, read a paper on M. Joachim Barrande, and the Darwinian Theory of Evolution.

Mr. NOBLE said that it would be in their recollection that various honorary members of the Society were elected at the recent annual meeting, and at the last meeting he had the pleasure of reading a letter of thanks from a *savant*, a very distinguished foreigner, who had been elected an honorary member, and who had forwarded to the Society several valuable works. He had now pleasure in reading a letter from a most able and distinguished geologist, who had presented to the Museum the books which were upon the table—M. Barrande, of Prague:—

(COPY.)

“Prague, 14th May, 1880.

“To the Honorary Secretary,—In inscribing my name amongst its honorary members, the Philosophical Society of Yorkshire has conferred upon me an unexpected distinction, with which I am very much flattered.

“I beg of you to express to it my sincere gratitude for this mark of kind and friendly sympathy.

“Accept, sir, the expression of my very high esteem.

“J. BARRANDE.

“I send you by the same post four brochures or pamphlets as a present to the Philosophical Society of Yorkshire :—

“1870. Defence of Colonies, with Map and Sections.

“1872. The different forms of crustacea and fishes.

“1877. Cephalopoda.

“1879. Brachiopoda.”

Mr. NOBLE added that in the first work in the list one of the most interesting points to which M. Barrande had drawn attention was the occurrence of what he termed Colonies, *i.e.*, groups of fossils having special characters which occur in beds intercalated in strata, having a different fauna, but subsequently recurring in higher beds as the predominant fauna. M. Barrande regarded them as migratory and temporary offshoots from some co-existent but distant fauna, which, subsequently, however, came into the same area in force, displacing the older fauna altogether. Those researches, and the conclusion deduced from them, were of the highest practical importance to the geologist and palæontologist, and were deserving of the most careful study. He (Mr. Noble) had thought it might not be uninteresting on the occasion of the last meeting of the session before the vacation to refer to the valuable works of M. Barrande on “The Defence of Colonies” and “The Cephalopoda,” and he had drawn up a few notes on the subject, which he would now read. Mr. Noble then proceeded :—This distinguished and indefatigable investigator and laborious worker in the field of geology and palæontology amongst the Silurian rocks of Bohemia, M. Joachim Barrande, has most deservedly gained for himself in this branch of science a world-wide reputation. His researches extend over the complete fauna of an entire geological formation. M. Barrande is a native of France, and commenced his researches in 1833 under great difficulties, having to make himself acquainted with the language of his partly-adopted country in order to facilitate his intercourse with the Bohemian workmen engaged in the

quarries round Prague. He not only assisted them with money, but supplied them with instruments to facilitate their labour. Anterior to 1840 the number of species scientifically indicated from the Silurian rocks of Bohemia was only 22, but by M. Barrande's vast energy these were soon increased to more than 1,200; at that period only two species of Brachiopods were known in Bohemia, but he now transmits to his successors above 600 named Silurian species. These valuable researches, so perseveringly and uninterruptedly carried on to the present time, are recorded in his great and magnificent work, "The Silurian System of Central Bohemia." His work on the Cephalopoda was commenced in 1865, and, now completed, extends to 544 large 4to plates and to about 3,600 4to pages of letterpress. In the smaller work on the table, the author has given a general *resumé* of his studies on the Cephalopoda, with additional notes, and has announced other works as now in progress. One on the Palæozoic Gasteropods will consist of more than 120 plates, and another on the Brachiopoda of 114 plates. In his two brochures, "The Defence of Colonies" already alluded to, and "The Cephalopoda"—for these must be studied in conjunction—he treats at some length the subject which at the present time is of such absorbing interest to palæontologists and naturalists generally, the attractive and fascinating theory of evolution by descent, of Darwin, of which he is a decided opponent, and boldly affirms that the theory of evolution of the cephalopods, like that of the trilobites, appears to be a mere product of the imagination, without any foundation in fact. In the brochure on the cephalopods, containing a *resumé* of the whole subject, is a masterly and exhaustive summary in support of the author's views. The notes are too long either for quotation or satisfactory analysis, the whole requiring the most attentive study. At page 248 he refers, evidently with great pleasure and satisfaction, to the opinions of three eminent *savants*, who have arrived at conclusions in distant and independent paths very near to or identical with those which the study of the cephalopods has led him to adopt. One of these *savants*, Mr. Thomas Davidson, he styles "our illustrious master and friend;" the second is, M. Grand Eury; and the third,

Mr. Carruthers, who is at the head of the botanical department of the British Museum, and considered one of the most distinguished and able botanists in Europe. M. Barrande, in alluding to Mr. Davidson, states that that eminent geologist published in the "Geological Magazine" a paper entitled, "What is a Brachiopod?" which exposes in the most succinct and most clear manner the results of all the labours and discoveries relative to the Brachiopods, results to which Mr. Davidson has contributed incomparably more than any other investigator. Mr. Davidson is also the author of the very extensive and exhaustive work on Brachiopoda, now in the course of publication by the Palæontographical Society. M. Barrande quotes largely from Mr. Davidson's three papers in the "Geological Magazine" for 1877. We shall here merely epitomize some of the latter's opinions and the conclusions at which he has arrived. At page 271 he says, "Darwin's tempting and beautiful theory of descent with modification bears a charm that appears to be almost irresistible, and I would be the last person to assert that it may not represent the actual mode of specific development. We are stopped by a number of questions that seem to plunge the conception in a maze of inexplicable, nay, mysterious difficulties; nor has Darwin, as far as I am aware, said how he supposes the first primordial form to have been introduced. The theory is, at best, as far as we can at present perceive with our imperfect state of knowledge, but half the truth, being well enough in many cases as between species and species; for it is evident that many so termed species may be nothing more than modifications produced by descent. It applies likewise to accidental variations as between closely allied genera; yet there is much more than this, with respect to which the theory seems insufficient. The strange geological persistency of certain types, such as *Lingula*, *Discina*, *Nautilus*, &c., seems also to bar the at present thorough acceptance of such a theory of general descent with modification." He further states that "We have no positive evidence of those modifications which the theory involves, for types on the whole appear permanent as long as they continue, and when a genus disappears there is no modification, that I can see, of any of the

forms that continue beyond, as far as the brachipoda appear to be concerned, and why should a number of genera such as *Lingula*, *Discina*, *Crania*, and *Rhynchonella* have continued to be represented with the same characters, and often with but small modification in shape during the entire sequence of geological strata? Why did they not offer modifications or alter during those incalculable ages?" Alluding also to other genera, he says, "They are all possessed of such marked and distinctive internal characters that we cannot trace between them and associated or synchronous genera any evidence of their being either modifications of one or the other, or of being the result of descent with modification. Therefore, although far from denying the possibility or probability of the correctness of the Darwinian theory, I could not conscientiously affirm that the Brachiopoda, as far as I am at present acquainted with them, would be of much service in proving it." In an inaugural address read before the members of the Geologists' Association in 1876, with special reference to the theory of evolution, Mr. Carruthers states: "The time required for such evolutions is beyond conception, and vastly greater than even the largest estimate of geologic time that has ever been made. That the rocks testify to a development of some kind is beyond doubt; but development is not necessarily the sole property of the mechanical evolutionist. At present we have no data to guide to a solution of the question as to the mode by which the development was accomplished. One thing is certain, that the whole testimony of the vegetable kingdom, as it is known to us from the remains preserved in the stratified rocks, is opposed to the doctrine that the development is due to evolution by descent." In the "Scientific Review," published in France, for June, 1877, there is an official report of a work recently published by M. Grand Eury upon the carboniferous flora of Central France by Mr. R. Zeiller, mining engineer, and this work may, perhaps, be quoted as one of the most exhaustive that has been written on the subject. The writer says it is remarkable to see in all this period the flora preserving a perfect unity from the base to the summit by the same classes, orders, and families; then to completely disappear. No species, per-

haps even no genus, is found again in the trias, in confirmation of the idea of a separate biological period, and contrary to the theory of continuity. During the course of this long series of successive deposits, no progressive modification of species can be proved. The genera follow the same law as the species; they disappear without sub-division or transformation. Let us add that contrary to the hypothesis of progressive development, each vegetable group shews itself, from its appearance, with the perfection of all its characters. In a word, nature appears to have given to its works, from the first blush, all the perfection of which they are capable. M. Barrande further remarks: "After the *resumé* of our studies upon the Cephalopods we cannot refrain from acknowledging a great harmony between the results obtained by M. Grand Eury and those which we have expounded, however dissimilar and however distant these two great subjects of scientific research may be; we see that the real development of vegetable life, like that of animal life, has been submitted to the same laws. The facts show that these simple and constant laws have nothing in common with the theories of evolution." In conclusion, M. Barrande remarks "that the testimony of these two witnesses, M. Grand Eury and Mr. Carruthers, taken from the vegetable kingdom are in perfect harmony and accordance with those, whether derived from the Brachiopods, or the Cephalopods, or the Trilobites, in the animal kingdom. One of the reviewers remarks: "Nor can those who are not prepared to accept M. Barrande's views with regard to the separate origin of every individual species or variety fail to admire the marvellous and vast labours of one of the most distinguished and indefatigable of pioneers in palæontological science." In concluding, Mr. Noble said he thought that it would be a satisfaction to those who did not agree with the Darwinian theory to know that the opinions of the eminent scientists to which he had referred were also supported by the works of the late Professor Phillips and Dr. Bigsby, F.R.S., F.G.S., formerly British Secretary to the Canadian Boundary Association, and the author of "Thesaurus Siluricus," and a still more recent work, "Thesaurus Devonico-Carboniferus."

